TARGET AUDIENCE: Engineering Flight

AFCESA A-GRAM

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

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THE ENERGY MEASUREMENT AND VERIFICATION (M&V) HANDBOOK

SYNOPSIS:
All energy projects are required to measure and validate their savings. This handbook provides a tool for the energy manager/engineer to effectively evaluate various energy technologies.

PURPOSE:
The purpose behind developing the AFCESA Energy M&V Handbook was to provide a tool that is easy to use and easy to understand. As the engineer or energy manager, you have to decide the best way to obtain the required energy data. There are several options for obtaining this information:

1. You can choose to use the "*North American Energy Measurement and Verification Protocol*" (NEMVP) or "*The Measurement and Verification Guideline for Federal Energy Projects*" (FEMP) and apply the protocol and guidelines to specific energy system technologies. These guidelines provide in-depth formulas and standard definitions of the protocols but tend to be complex and hard to interpret.
2. You can choose to use the AFCESA M&V handbook. This guide was developed using the NEMVP and FEMP protocols, but we removed a lot of the hard-to-understand verbiage that was used to develop those protocols. We added a section for each technology that gives advantages and disadvan-tages for the government and con-tractor. We also added diagrams that show where to place the metering equipment to get the proper readings.
3. The last option is to develop your own methods for obtaining and validating energy data. This depends largely on the complexity of technology. One disadvantage to this method is that all parities (government and contractor) must agree to the pro-cedures. Options one and two are already used within the energy engineering communities.

WHO SHOULD USE THE HANDBOOK:
The AFCESA M&V Handbook is designed for use by base personnel to evaluate the performance of all energy projects. The reference handbook provides tools for developing and evaluating energy conservation measure (ECM) baselines and for validating the performance of the implemented energy conservation measures typically seen at Air Force bases. The handbook offers practical and cost effective M&V options that provide the greatest benefit for the cost associated with measuring and vali-dating each technology.

WHY TO USE THE HANDBOOK:
Besides the diagrams on proper location of metering, there are additional reasons to use the M&V handbook, such as:

1 Helps to accurately establish the baseline conditions.
2. Helps define the scope and risks of using the selected M&V.
3. Helps define the level of M&V needed for each technology and associated costs.
4. Evaluates the performance of ESPC/DSM contracts.

HANDBOOK LOCATION:
The M&V handbook can be located on the July 1998 issue of the Construction Criteria Base (CCB), the ESPC CD-ROM developed by AFCESA, and on the AFCESA Home Page under technical support/energy. The NEMVP or IPMVP home page is http://www.ipmvp.org/.

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